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(54) Toy character.

(57) A toy character comprising a main body section (1) mounted on 3 wheels (2,3,4). The axle (5) joining the rear wheels (2,3) is mounted to at least one of the wheels at a position radially offset from the centre of the wheel. This causes the toy to roll from side to side as it is pulled along. Head (11) and tail (12) members are rotatably mounted to the body (1), and fins (23-25) loosely fit into slots (28-31) in the top of the body.

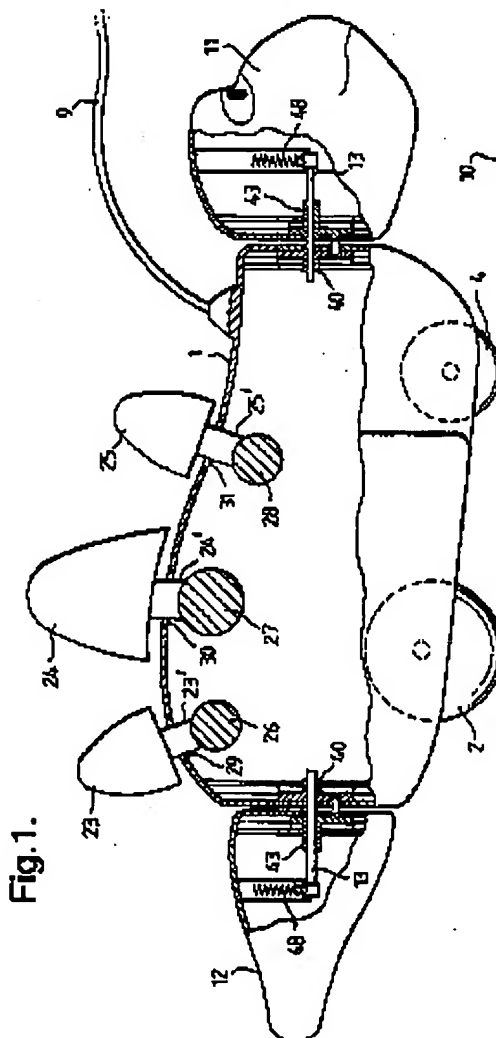


Fig. 1.

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The present invention relates to a toy character, mounted on wheels, which may be pulled along by a child.

In accordance with the present invention, a toy character comprises a main body section, two circular wheels joined by an axle journaled to the main body section, wherein the axle is attached to at least one wheel at a position radially offset from the centre of the wheel.

As a toy character according to the invention is pulled along by a child, the main body section will oscillate from side to side. One or preferably both wheels may be radially offset from the axle. Where both wheels are offset, the centres of the wheels may be offset by different amounts. The wheels may be offset in the same direction or may be angularly displaced. Preferably, the centres of each wheel are offset from the axle at an equal distance from the other wheel, and are angularly displaced by 180°, i.e. each wheel is offset from the axle an equal distance and in an opposite direction from the other wheel. This ensures that the main body section tilts evenly on each side.

The character may be pulled along and supported on only two wheels with a third point of support being lifted in the air during movement, and supporting the character when it is at rest. Alternatively, the third point of support may slide along a surface as the character is pulled along. Preferably, the main body section includes a front wheel which allows the character to roll along a surface unsupported.

The character may have a head, tail, fin or other projections integrally formed with the main body section. Preferably, the character further comprises head, tail and fin sections which are pivotally mounted to the main body section and oscillate with respect to the main body section as it rolls along.

In a preferable embodiment the head and tail are prevented from rotating by more than 80°. Typically, the head and tail are also biased towards a rest position by a spring, or by a weight placed at the bottom of the head or tail.

A toy character according to the invention will now be described with reference to the accompanying Figures, in which:-

Figure 1 is a side view, partly in section, of the toy character;

Figure 2 is a rear view, partly in section;

Figure 3 is a side view of the two rear wheels joined by an offset axle;

Figure 4 is an end view of the two rear wheels;

Figure 5 is a bottom view, partly in section, of the toy character;

Figure 6 is a cross-section showing the tail hinges in detail;

Figure 7 is a side view in section along a line A-A in Figure 6;

Figure 8 is a cross-section taken along a line B-

B in Figure 6;

Figure 9 is a cross-section along the line C-C in Figure 8, in which the tail is in its rest position; and,

Figure 10 shows the tail rotating.

The character comprises a main body section (1) with offset rear wheels (2,3) (wheel 3 is hidden behind wheel 2 in Figure 1) and front wheel 4. Offset rear wheels (2,3) are joined by an axle 5 which is journaled to the main body section at 6 and 7. Figures 3 and 4 show the positioning of the axle 5 relative to the centres (c) and (c') of the circular wheels 2 and 3. The axle 5 is offset from the centres (c,c') of the wheels. The amount of offset (b) is the same for both wheels, as shown in Figure 3, and the wheels are offset on opposite sides of the axle 5, as shown in Figure 4 (i.e. a line joining c and c' in Figure 4 goes through the centre of the axle 5). This ensures that the amount of tilt is the same on both sides.

The offset axle 5 causes the character to oscillate from side to side as shown at 8 in Figure 2, as it is pulled along by a string 9. As the wheels (2,3) revolve, their centres (c,c') rotate about the axle 5. In Figure 2, the centre c' of wheel 3 is directly above the axle 5. The angle of tilt  $\theta$  is now at its highest value. This will oscillate between approximately  $\pm \tan^{-1}(2b/d)$ , where d is the distance between the contact points between the wheels 2 and 3 and the surface 10. Therefore, b and d can be chosen for a desired maximum amount of tilt (i.e. degree of "wobble"). The wheels (2,3,4) have rolling surfaces curved in the axial direction as shown in Figures 3, 4 and 5 which allow the body 1 to oscillate smoothly as it rolls along.

Head 11 and tail 12 are pivotally connected to the main body section 1. Both are mounted to the main body section 1 in a similar manner, illustrated in detail for the tail section in Figures 6-10.

Figure 6 is a cross-section showing in detail the connection between the tail 12 and the rear of the body 1. The tail 12 is pivotally mounted on steel pivot shaft 13, which is rigidly fixed to front bush 40. The bush 40 is rigidly fixed to the rear of the body by a flange 50 which fits into a slot 51. The slot 51 is shown in Figure 8 (which is a cross-section along the line B-B in Figure 6 in which the shaft 13 and fixing members have been removed). The slot 51 is formed by integral L-shaped ribs 41,44 and supporting ribs 42,54 formed in the body member 1 (these are shown in Figure 7, which is a cross-section along the line A-A in Figure 6).

The pivot shaft 13 is also rotatably mounted to rear bush 43. The rear bush is rigidly fixed to the tail member 1 in a similar way to the front bush.

As can be seen in Figure 7, the front flange 50 has a 180° slot 46 which receives a projection 47 in the rear flange 52. This allows the tail to rotate until the projection 47 engages one end of the slot 46.

A spring 48 fixed to the end of the pivot shaft en-

gages with T-shaped ribs 49 when the shaft rotates. This is shown in Figures 9 and 10. When the tail rotates from its rest position (shown in Figure 9), the spring 48 engages one of the ribs 49, which provides a biasing force to resist the rotation.

Alternatively, the head and tail may have weights at the bottom which tend to bias them to a level (i.e. rest) position with respect to the surface.

Main body section 1 also has fins (23,24,25) attached to flexible members (23',24',25') which pass through slots (29,30,31). The flexible members (23',24',25') have weights (26,27,28) attached to their ends. The flexible members fit loosely in the slots, allowing the fins to oscillate as shown at 32 in Figure 2. As in the case of the head and the tail, the weights (26,28) will tend to bias the fins towards an upright position, and friction will cause the fins to deviate from the vertical as the main body oscillates, causing the fins to oscillate like simple pendulums. Flexible members (23'-26') will flex in the direction 32 to allow further movement. The size of the fins (23-26), length of the flexible members (23'-26') and mass of the weights (26-28) can be varied to allow varying frequencies of oscillation of each respective fin.

The oscillation of features as described gives a toy character which has a distinctive rolling gait as it is pulled along by a child, with the head and tail wobbling relative to the main body, and the fins oscillating to give a rippling effect along its back.

A further preferable feature is a "growl" noise box mechanism inside the character, such as a ball which rolls around a disk with a corrugated edge. As the body oscillates, the ball rolls round the disk, causing the distinctive "growling sound".

a third point of support of the main body section.

5. A character according to any of the preceding claims, wherein the wheels (3,4,5) are curved in the axial direction.
6. A character according to any of the preceding claims, further comprising a head member (11) rotatably mounted to the main body section (1).
7. A character according to any of the preceding claims, further comprising a tail member rotatably mounted to the main body section (1).
8. A character according to claim 6 or claim 7, further comprising limiting means (46,47) which limits the extent of rotation by the head and/or tail member.
9. A character according to any of claims 6 to 8, further comprising biasing means (48,49) which biases the head and/or tail to a rest position.
10. A character according to any of the preceding claims, further comprising a fin or fins (23-25) slotted along and extending above the top of the main body section (1), wherein the or each fin includes flexible members (23'-25') which pass through slots (29-31) in the top of the main body section, and weights (26-28) attached to the other end of the or each flexible member, whereby the or each fin oscillates from side to side as the character moves along.

## Claims

1. A toy character comprising a main body section (1), two circular wheels (2,3) joined by an axle (5) journaled to the main body section (1), characterized in that the axle (5) is attached to at least one of the wheels at a position radially offset from the centre of the wheel.
2. A character according to claim 1, wherein the axle (5) is attached to both wheels at a position radially offset from the centre of each wheel.
3. A character according to claim 2, wherein the centre of each wheel is offset from the axle at an equal distance and an opposite direction from the other wheel.
4. A character according to any of the preceding claims, further comprising a third wheel (4) mounted on a second axle joined to the main body section, whereby the third wheel comprises

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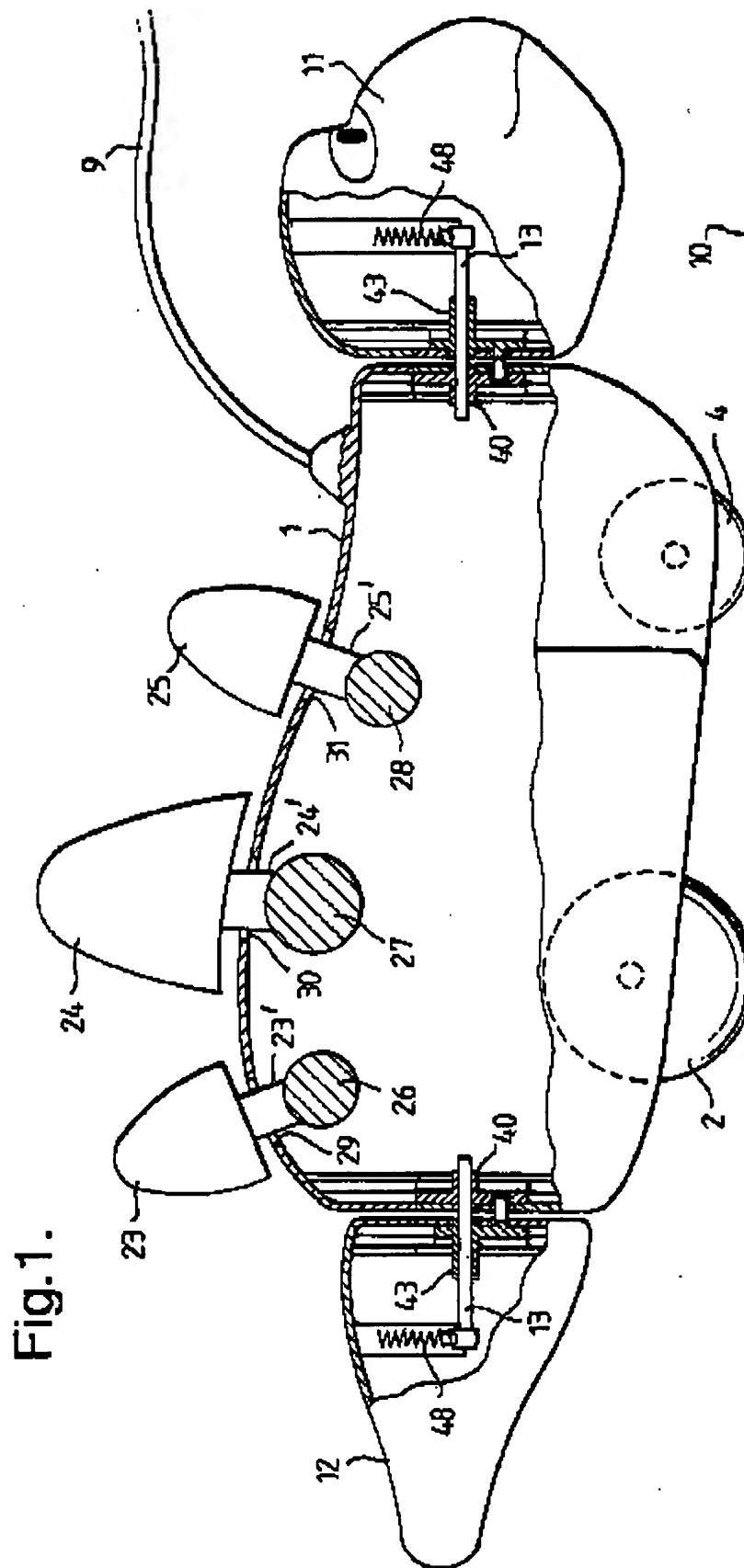


Fig. 1.

Fig.2.

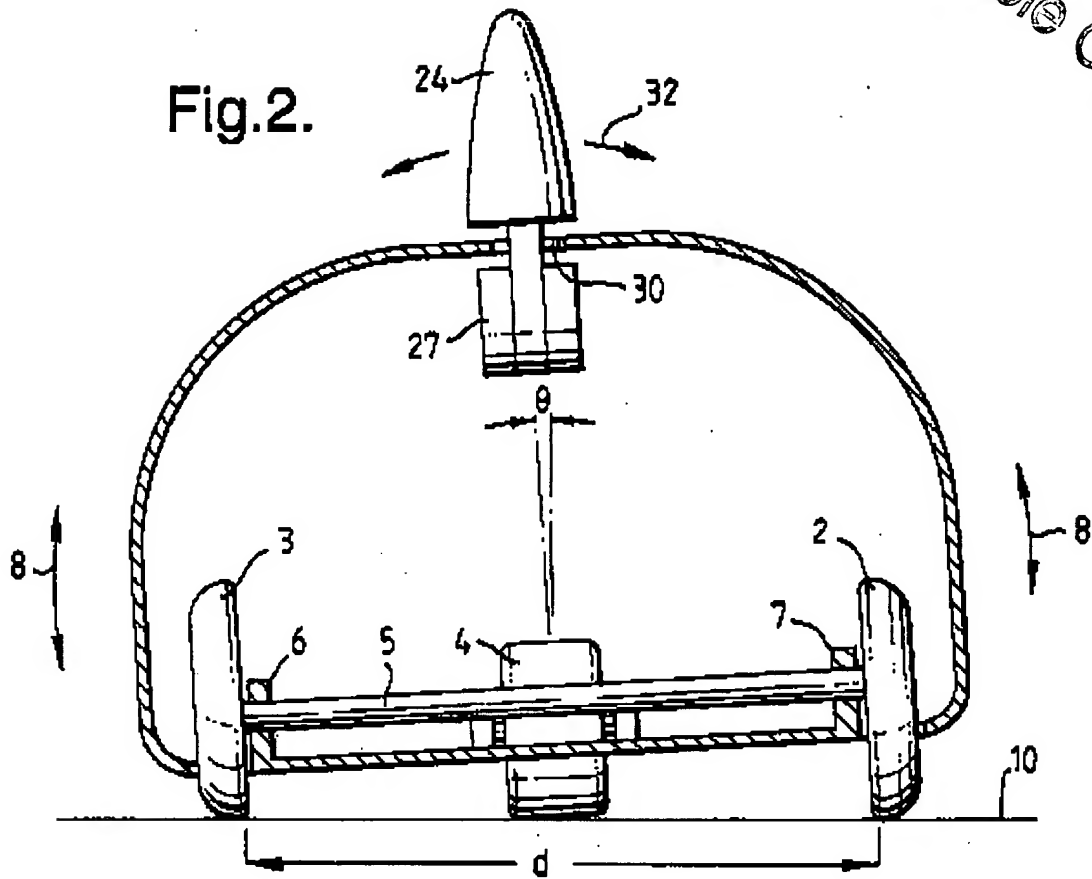


Fig.3.

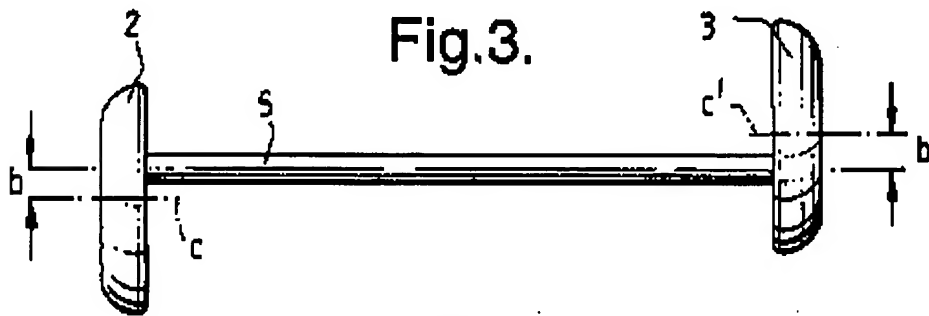
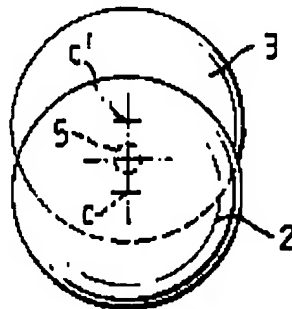


Fig.4.



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Fig.5.

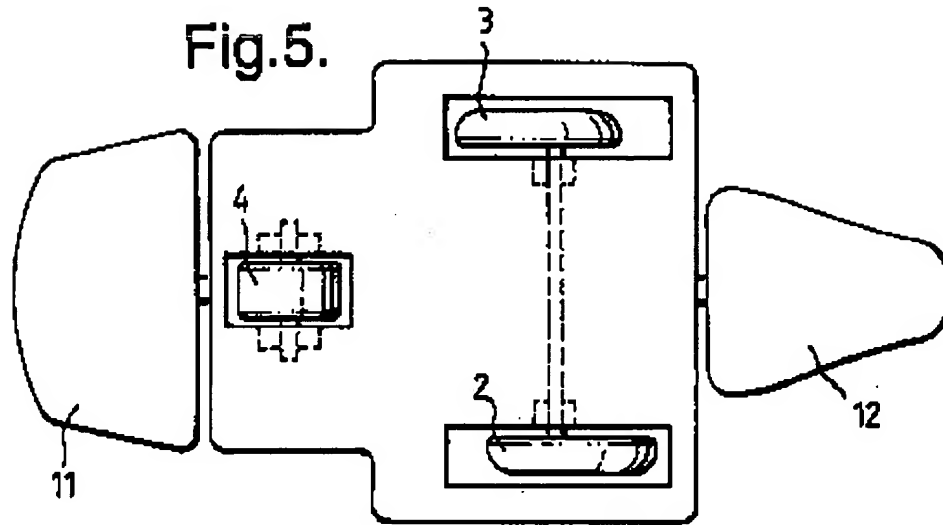


Fig.9.

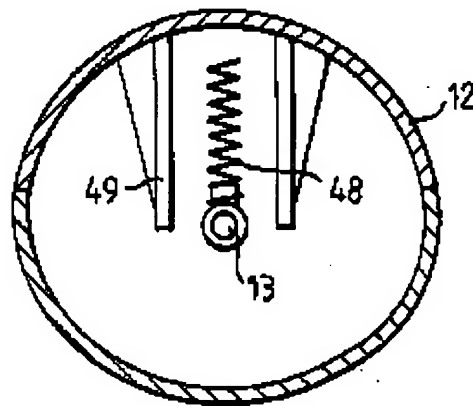
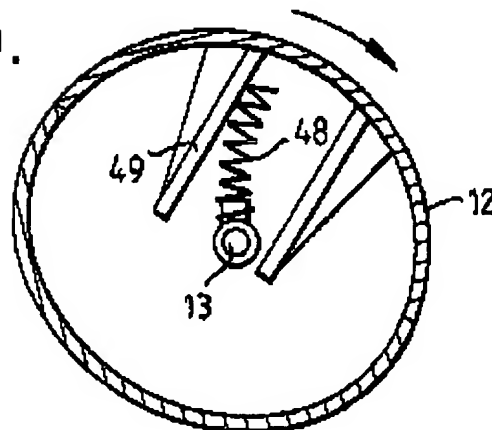


Fig.10.



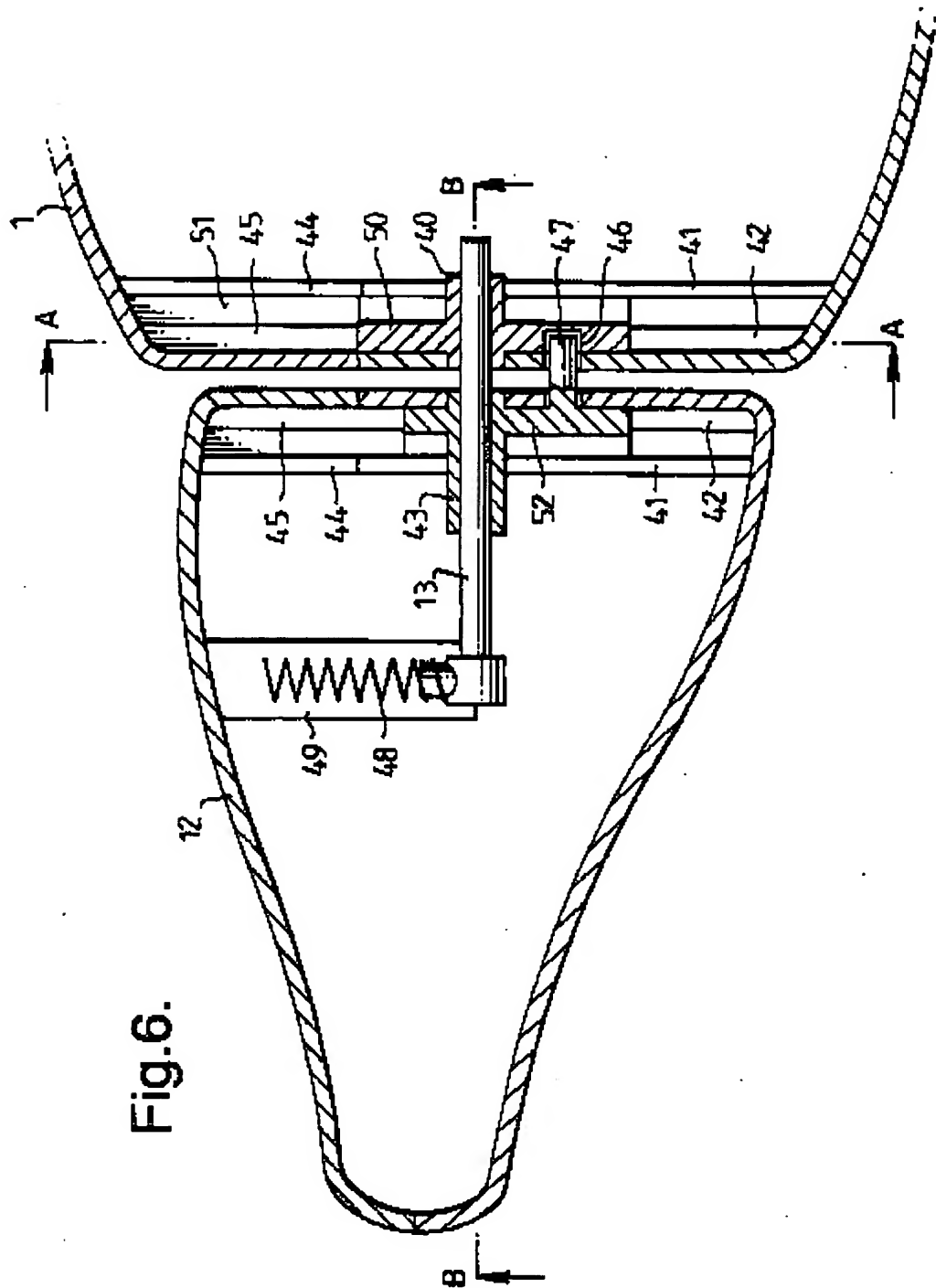


Fig.7.

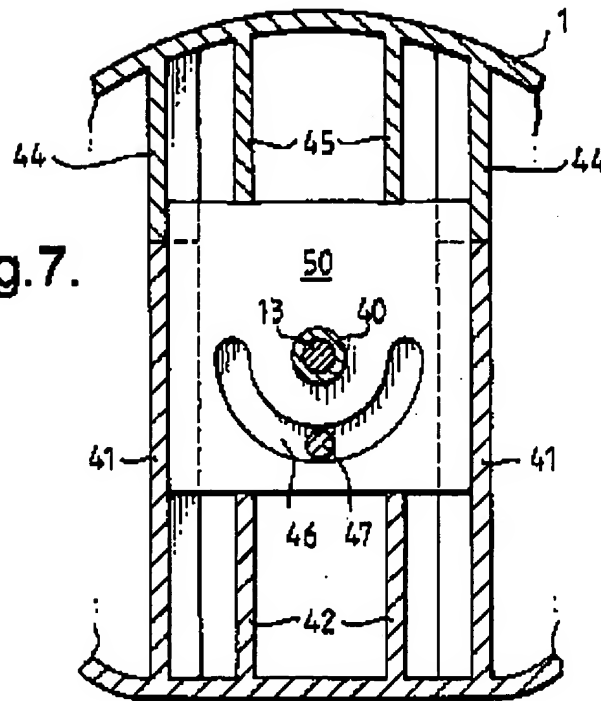
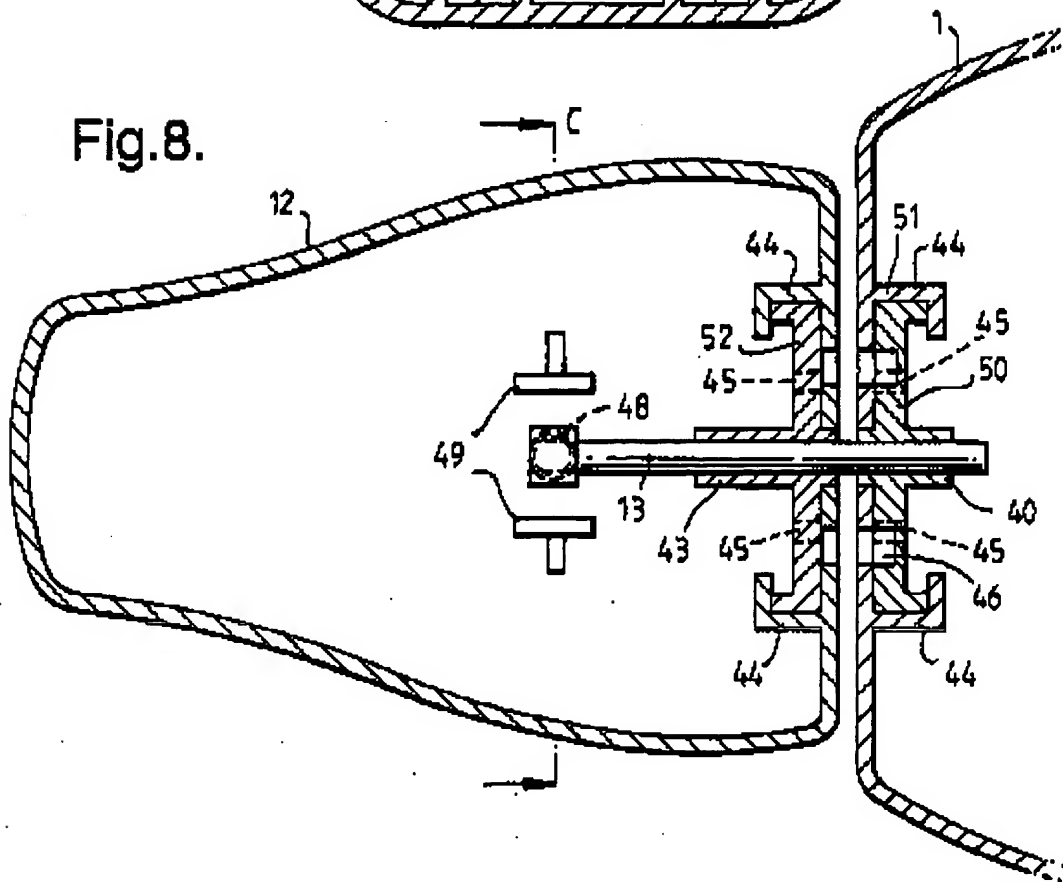


Fig.8.





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## EUROPEAN SEARCH REPORT

Application Number  
EP 94 30 6247

## DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.CI.)
X	DE-B-10 97 875 (ERNST)	1,2,4,6-9,10	A63H11/12
Y	* column 2, line 49 - line 52; figures 1,3 *		
X	FR-A-2 597 002 (MORIZOT) * page 2, line 15 - line 18; figure 1 *	1-3	
Y	FR-A-1 340 283 (RUCHOT) * page 2, column 1, line 28 - line 33; figure 1 *	10	
A	GB-A-656 968 (MONTAGUE MEJLSO ET AL.) * figure 1 *	10	
The present search report has been drawn up for all claims			TECHNICAL FIELD(S) SEARCHED (Int. Cl. 8) A63H
Place of search THE HAGUE	Date of completion of the search 4 November 1994	Examiner Papa, E	
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document I : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : number of the same patent family, corresponding document			

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